WHAT IS CLAIMED IS:

1. A near-field optical probe, comprising:

a substrate; and

a metallic scatterer fabricated on said substrate in a contour of a circular cone or a polygonal pyramid having an axis vertical to a surface of the substrate.

2. A near-field optical probe, comprising:

a substrate; and

a metallic scatterer fabricated on said substrate in a contour of a planar ellipse having a major axis, a minor axis, and thickness, the major axis, the minor axis, and the thickness being equal to or less than a wavelength of light.

3. A near-field optical probe, comprising:

a substrate; and

a metallic scatterer fabricated on said substrate in a contour of a triangle having a vertex with a radius of curvature and thickness, the radius of curvature and the thickness being equal to or less than a wavelength of light.

4. A near-field optical probe, comprising:

a substrate; and

a metallic scatterer fabricated on said substrate in a contour of a triangle having a first vertex, second vertex, and a third vertex, the first vertex having a radius of curvature less than a radius of curvature of each of the second and third vertices.

5. A near-field optical probe according to claim 3, wherein the triangle is connected to a film in a periphery of the triangle on the plane to dispose an opening in the connecting section, the opening having a radius of curvature greater than a radius of curvature of the vertex of the triangle.

6. A near-field optical probe, comprising:

a substrate;

a first metallic film having a pointed tip end; and

a second metallic film in an arbitrary contour, wherein the tip end is apart several tens of nanometers from the second metallic film.

7. A near-field optical probe, comprising:

a substrate;

a first metallic film having a pointed tip end; and

a second metallic film having a pointed tip end, wherein the tip ends are apart several tens of nanometers from each other.

8. A near-field optical probe according to claim 1, further including in a periphery of said scatterer a metallic film, a dielectric film, or a semiconductor film having film thickness substantially equal to height of said scatterer.

9. A near-field optical probe according to claim 8, wherein:

said film is a light shielding film; and

said scatterer is apart from said peripheral film by a gap equal to or less than a wavelength of light.

10. A near-field optical probe according to claim 1, further including a dip in the substrate surface with depth substantially equal to height of said scatterer, wherein said metallic scatterer is formed in said dip.

11. A near-field optical probe according to claim 8, wherein a gap between said scatterer and said peripheral film or between said scatterer and said dip is filled with a light transmitting material.

12. A near-field optical probe according to claim 1, wherein said substrate is a contour of a semi-sphere.

13. A near-field optical probe according to claim 1, further including a light condensing element on said substrate.

14. A near-field optical probe according to claim 13, wherein said light condensing element is a holographic lens.

15. A near-field optical probe according to claim 1, wherein said metallic scatterer is formed on an edge surface of an optical resonator.

16. A near-field optical probe according to claim 1, wherein said metallic scatterer is formed on a light emitting edge surface of a semiconductor laser.

17. A near-field optical probe, comprising:

a substrate; and

a metallic film having a pointed tip end in a contour of a planar ellipse or a triangle on a side surface or an inclined side surface of the substrate,

said pointed tip end being brought into contact with a surface of a sample.

18. A near-field optical probe according to claim 17, wherein said metallic film on the side surface of the substrate is coated with a transparent dielectric substance .

19. A near-field optical microscope including a near-field optical probe according to claim 18.

20. An optical recording/reading device including a near-field optical probe according to claim 17.

21. A near-field optical microscope and an optical recording/reading device employing an automatic adjusting method, wherein the automatic adjusting method includes the steps of:

separating part of light incident to a near-field optical probe;

feeding the part of light to a focal point adjusting pattern fabricated at a position near a source of near-field light;

measuring a contour of light reflected from the pattern; and

adjusting a focal point of the incident light.

22. A near-field optical microscope and an optical recording/reading device according to claim 21 employing an automatic adjusting method, wherein the automatic adjusting method includes the steps of:

feeding the light reflected from the pattern to a convex lens and a cylindrical lens;

measuring distortion of a beam shape; and

positioning a direction vertical to a surface of a substrate.

23. A near-field optical microscope and an optical recording/reading device according to claim 21 employing an automatic adjusting method, wherein the automatic adjusting method includes the steps of:

forming, as the pattern, two small and elongated grooves vertically intersecting each other, each said groove having width less than a diameter of an optical spot;

separating incident light into three beams;

feeding one of the beams to a source of near-field light;

feeding the remaining beams to central sections respectively of said two grooves;

comparing quantity of light between two bright areas respectively of patterns of light reflected from said two grooves;

adjusting a focal point according to a result of the comparison.

24. An optical recording/reading device using a

recording disk including a near-field optical probe in a cartridge.

25. An optical recording/reading device according to claim 24 using a recording disk in a structure, said structure including:

a cartridge having a rotating shaft at a corner thereof;

an arm attached to said rotating shaft;

a near-field optical probe attached by a suspension to said arm.

26. An optical recording/reading device according to claim 24, wherein

a rotating shaft to which said arm is attached is connected to an arm to which an optical head including a light source and an optical sensor is attached;

the optical head and the near-field optical probe thereby operate in a cooperative way;

light from the optical is fed via a window disposed in the cartridge to the near-field optical probe.

27. An optical recording/reading device according to claim 25, wherein a v-shaped groove and a semi-spherical projection are employed to connect the arm attached to the near-field optical probe to the arm attached to the optical head.

28. An optical recording/reading device using a recording disk including a metallic layer below a

recording layer.